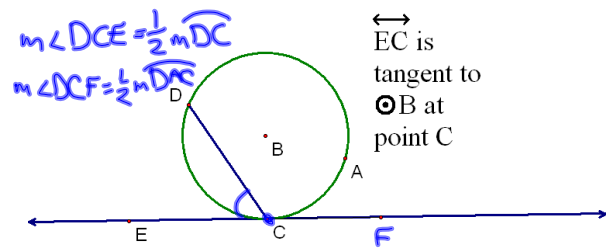


10-5 Apply Other Angle Relationships in Circles

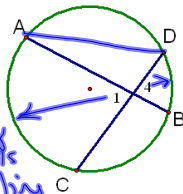
Theorem 10.11--If a tangent and a chord intersect at a point on a circle, then the measure of each angle formed is one half the measure of its intercepted arc.



Given: picture

Prove: $m\angle 4 = \frac{1}{2}(m\widehat{AC} + m\widehat{DB})$

- | | |
|---|--|
| <p><u>S</u></p> <p>① Draw \overline{AD}</p> <p>② $m\angle 4 = m\angle A + m\angle D$</p> <p>③ $m\angle A = \frac{1}{2} m\widehat{DB}$
$m\angle D = \frac{1}{2} m\widehat{AC}$</p> <p>④ $m\angle 4 = \frac{1}{2} m\widehat{DB} + \frac{1}{2} m\widehat{AC}$</p> <p>⑤ $m\angle 4 = \frac{1}{2}(m\widehat{DB} + m\widehat{AC})$</p> <p>⑥ $m\angle 4 = \frac{1}{2}(m\widehat{AC} + m\widehat{DB})$</p> | <p><u>R</u></p> <p>① Through any 2 pts. there is exactly one line</p> <p>② Ext \angle Δ thm</p> <p>③ Measure of inscribed \angle thm.</p> <p>④ Subst.</p> <p>⑤ Subst.</p> <p>⑥ Commutative</p> |
|---|--|



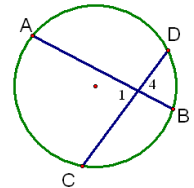
Theorem 10-12--Angles Inside the Circle

Theorem--The measure of an angle formed on the inside of a circle (by 2 secants or 2 chords) is half the sum of the measures of the intercepted arcs.

$$m\angle 1 = \frac{1}{2}(m\widehat{AC} + m\widehat{DB})$$

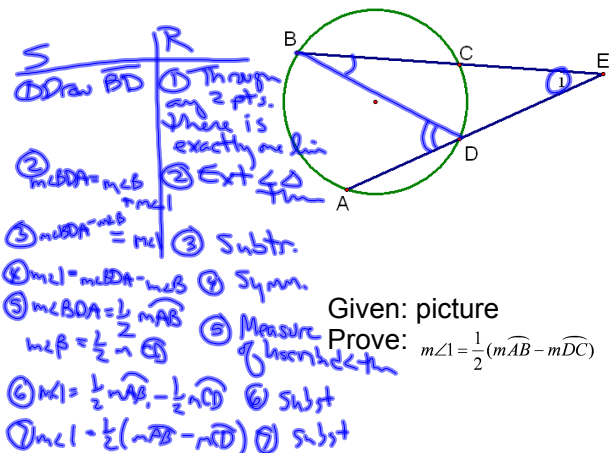
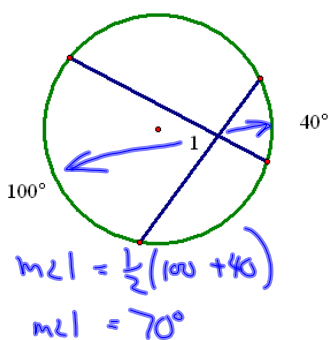
or

$$m\angle 4 = \frac{1}{2}(m\widehat{AC} + m\widehat{DB})$$



gsp

Find the measure of the angle.

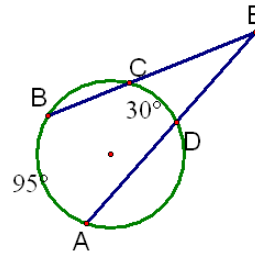
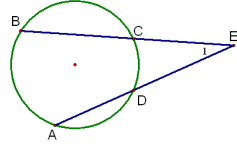


Given: picture

Prove: $m\angle 1 = \frac{1}{2}(m\widehat{AB} - m\widehat{CD})$

Theorem 10-13--Angles Outside the Circle
Theorem--The measure of an angle formed on the outside of a circle (by 2 secants, 2 tangents, or secant and a tangent) is half the difference of the measures of the intercepted arcs.

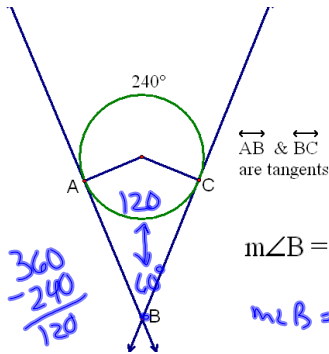
$$m\angle I = \frac{1}{2}(m\widehat{AB} - m\widehat{CD})$$



$$m\angle E = \frac{1}{2}(95 - 30)$$

$$m\angle E = 32.5^\circ$$

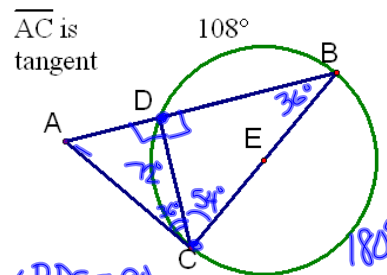
gsp



\overleftrightarrow{AB} & \overleftrightarrow{BC}
are tangents

$$m\angle B = \frac{1}{2}(240 - 120)$$

$$m\angle B = 60$$



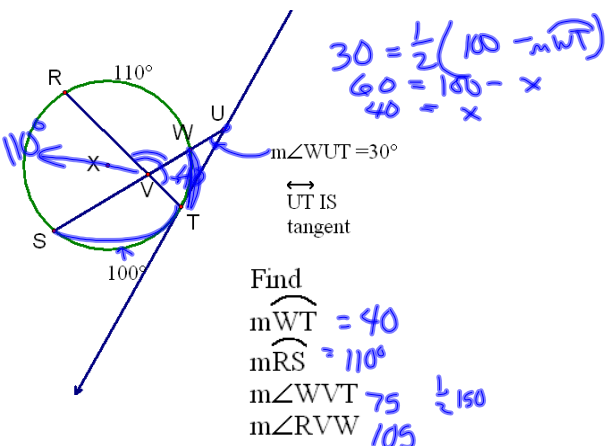
$$m\angle BDC = 90$$

$$m\angle B = \frac{1}{2}72 = 36^\circ$$

$$m\angle DCA = 36^\circ$$

$$m\angle DCB = \frac{1}{2}108 = 54^\circ$$

$$m\angle A = 54^\circ$$



$$30 = \frac{1}{2}(100 - m\widehat{WT})$$

$$60 = 100 - x$$

$$40 = x$$

$$m\angle WUT = 30^\circ$$

\overleftrightarrow{UT} is
tangent

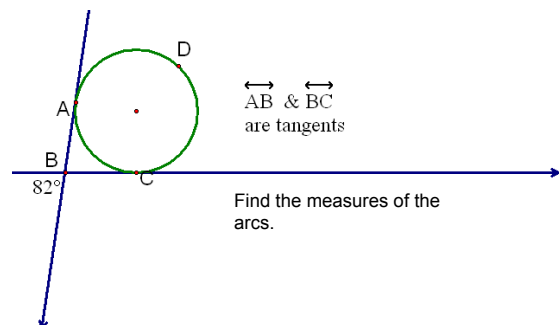
Find

$$m\widehat{WT} = 40$$

$$m\widehat{RS} = 110^\circ$$

$$m\angle WVT = 75$$

$$m\angle RVW = 105$$



\overleftrightarrow{AB} & \overleftrightarrow{BC}
are tangents

Find the measures of the
arcs.

Attachments

10_6_gsp_example.gsp